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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,601	03/23/2001	Masaki Ueno	73600.P029	6171

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EXAMINER

FALASCO, LOUIS V

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/816,601

Applicant(s)

UENO ET AL.

Examiner

Louis Falasco

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-9, 11, 22, 23 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-9 and 23 is/are allowed.
- 6) ☒ Claim(s) 11, 22 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>05/24/05</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

PAPERS RECEIVED

Applicants' Amendment with Petition to Revive (Granted) received 12/28/04 is acknowledged.

CLAIMS

Claims under consideration are 2 to 9, 11, 22, 23 and 25.

Claims 2 to 9, and 23 have been allowed.

ACTIONS

Statutory basis

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Rejections

1. Applicant's Amendment filed 12/28/04 has been fully considered but they are moot in view of the new ground of rejection in this action.
2. Claims 11, 22 and 25 are is rejected under 35 USC 103 over **Fluke et al** (US 6313973 copy submitted by applicants) or **Gill** (US 6271997) either one taken with either

Kawawake et al (US 2001/0046110) or **Sakakima et al** (US 6567246) in view of **Fukuzawa et al** (US 6338899 – newly applied).

Fluke et al or **Gill** teach the basic requirements of the spin valve of the claims including a spin-valve type magnetoresistance sensor with a free ferromagnetic layer; a pinned ferromagnetic layer; a non-magnetic spacer layer which is sandwiched between the free ferromagnetic layer and the pinned ferromagnetic layer; an anti-ferromagnetic layer which is disposed adjacent to the pinned ferromagnetic layer; a non-magnetic back layer which is disposed adjacent to the free ferromagnetic layer and which is stacked on the opposite side of the free ferromagnetic layer from the non-magnetic spacer layer – see Fig. 6 and 7 and Cu layer 6 of **Fluke et al** or see Fig 12 and Cu layer 210 of **Gill**. Neither **Fluke et al** nor **Gill** teach a reflective layer of a metallic oxide. However either of **Kawawake et al** and **Sakakima et al** teach the inclusion of an electron-reflective oxide layer which is disposed adjacent to the back layer stacked on an opposed side from the free ferromagnetic layer see layer 9-1 in Fig 5 and paragraph [00116] of **Kawawake et al** or see reflective layer 6 in Fig 2 and col. 9 lns 9 and 32 of **Sakakima et al**. However neither of **Kawawake et al** and **Sakakima et al** teach the presently claimed *TaO* film as the reflective layer, **Fukuzawa et al** teaches *TaO* film (layer 147 of Fig. 17 and see col. 49 ln 20). Though **Fukuzawa et al** does not recite these as reflective layer claims 11, 22 and 25 are not limited to the dimensions required at instant specification paragraph [0041] for being electron reflective.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to adopt the reflective layer with oxide such as shown by **Kawawake et al** or **Sakakima et al** in spin-valve type magnetoresistance sensors of the **Fluke et al** or **Gill** primary references for the purpose of increasing efficiency of the spin-valve and have an *TaO* suggested by **Fukuzawa et al** to provide increase wear protection (col. 49 lns 21,22). One skilled in the art would have been motivated to adopt **Fukuzawa et al** with **Sakakima et al** and **Kawawake et al** expecting a protection of the spin valve with the *TaO* layer and further increasing the density and responsiveness of the recording media as evident from the MR ratio increase of the spin-valve (col. 9 ln 13 of **Sakakima et al** and last sentence of paragraph [00116] of **Kawawake et al**).

Examiners Reasons or Allowance

The following is a statement of reasons for the indication of allowable subject matter.

The primary reason for allowance of claims 2 to 9, and 23 is the inclusion of .05 to 1.75 nm thickness for the *TaO* layer in independent claim 2 and dependent claim 23. The newly applied **Fukuzawa et al** patent teaches a TaO as a constituent for the protective layer but fails to teach the dimensions applicants have specified and included in the claims for the function as an electron reflective layer, further **Fukuzawa et al** points out that the Ta layer is not intended to be reflective by includes other metallic layers as

reflective layers (col. 84 lns 19, 20). Applicants' disclosure indicates it is at thicknesses of .05 to 1.75 nm where the TaO will function as an electron reflective layer (instant specification paragraph [0041]). Claims including these thicknesses have been allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CONCLUSION

The claims are 2 to 9, 11, 22, 23 and 25.

- Claims 11, 22, and 25 have been rejected.
- Claims 2 to 9, and 23 have been allowed

INQUIRES

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louis Falasco, PhD whose telephone number is (571)272-1507. The examiner can normally be reached on M-F 10:30 - 7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol D. Chaney, PhD can be reached at (571)272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1773

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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STEVAN A. RESAN
PRIMARY EXAMINER